



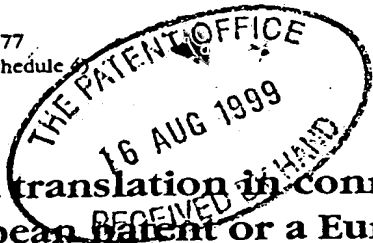
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Signed this sixteenth day of July 1999

Elisabeth Keen

17

## Description

- [0001] This invention relates to a process for the cleaning and disinfection of substantially rectangular solid textile articles such as, for example, mattresses or other sprung elastic articles covered with a textile material. The invention also relates to a biological disinfecting and cleaning agent.
- 10 [0002] The cleaning - i.e. the removal of adhering dust and loose polluting matter - of, for example, textile floor-coverings or upholstered furniture by means of vacuum cleaners or similar devices, is known.
- 15 [0003] There is an increasing emergence of the use of electronically controlled vacuum cleaners, wherein the vacuuming power can be accommodated to the covering being cleaned or to the article being cleaned. Particularly in the case of fluffy textile materials or of carpets with a similar pile, it is not possible to apply the maximum vacuuming power desirable for cleaning purposes. An excessive vacuuming power would lead in this case to irreversible damage of the structure of the material or to the surface of the material. Moreover, in the process
- 20 described above for the cleaning of textile articles, there is the disadvantage that these processes cannot be used at random for substantially rectangular solid textile articles such as, for example, mattresses. Here it has proved to be a disadvantage that although the surface of these articles can be cleaned adequately, pollutants - in particular allergens such as house dust mites and their excreta - in the interior of the textile article cannot be removed with the required degree of success from the textile article.
- 25
- 30
- 35 [0004] In addition to this, a process for cleaning mattresses, upholstered furniture and other textile furnishings is known, for example from DE-C-41 39 199, whereby, by means of a vacuum-producing and suction device, a mechanical vibration in the frequency range of 10 to 12

kHz is produced in the textile article and this loosens the pollutants, particularly the aforementioned allergens, in the interior of the textile article from the fibres of the textile article and extracts them from the textile article through the application of suction. This process has proved reliable in practice.

[0005] For cleaning textiles, upholstered furniture and/or curtains, the use of various stain removers containing either surfactants or purely biological components is also known. This procedure has the disadvantage that the textile article, such as upholstered furniture and/or curtains or carpets, is thoroughly wetted by the stain remover, which as a rule contains a large amount of water. As a result, upholstered furniture and carpets in particular, for example, carpeting, cannot be used for a relatively long period of time, as these articles must first dry out thoroughly after the cleaning process before being used again. But here the disadvantage is that, for example, the components of the aforesaid textile article which lie underneath the textile covering of an item of upholstered furniture or underneath the textile pile of the carpeting are likewise thoroughly wetted. In the case of an item of upholstered furniture, this can consequently lead to damage, for example, corrosion of any springs present. The thorough wetting of carpeting has the disadvantage that the plastics underlay of the carpeting adjacent to the floor can become porous and that breeding places for bacteria, fungi or the like can develop here as a result of the moisture.

[0006] Finally, a disadvantage of the procedure described above is that a stain remover can only remove soiling from the textiles. In order to neutralise odours or to achieve an antibacterial disinfection, it is necessary to use in addition other liquid cleaning agents or disinfecting agents whereby odours can be neutralised and the textile

articles can be disinfected. As a rule, such stain  
removers, deodorants and disinfecting agents are chemical  
agents whereby a good result as regards cleaning and  
disinfection can be achieved. The aforementioned drawbacks  
5 of this procedure are, however, especially disadvantageous  
in particular in the case of those articles which are to be  
brought back into use immediately after the cleaning and  
disinfection process. Here one may mention in particular  
the coverings of upholstered furniture and of mattresses,  
10 for which a drying time of up to several hours or days is a  
disadvantage in so far as such an article of furniture  
cannot be used. It is not therefore possible, particularly  
in the domestic sphere, to clean mattresses without having  
to change over to certain professional cleaning processes.

15 [0007] Also known in the carpeting sector is a mechanical  
cleaning method wherein, by means of a cleaning device, a  
liquid cleaning agent is applied to the carpeting and  
removed again by suction immediately after application. A  
20 thorough wetting of the carpeting being cleaned is thereby  
said to be avoided. It has become apparent that even in a  
procedure of this kind, the carpeting is wetted to such an  
extent that it is not possible to use the carpeting for a  
short time after cleaning. In this respect, neither is this  
25 mechanical method suitable for cleaning upholstered  
furniture which is to be used again shortly after the  
cleaning process.

[0008] In the case of mattresses, it has moreover been  
30 found that cleaning is possible only by expensive processes  
if a degree of cleaning is to be achieved which removes or  
at least neutralises in particular the allergens which  
cause allergies to household dust. It can be proved that  
allergies to household dust are caused by guanine, a  
35 constituent of the excreta of house dust mites. But the  
removal of this guanine is very expensive, particularly in  
the cleaning of mattresses, and ultimately does not

necessarily lead to the result that the mattress is free of this allergen, as the very finest particles of the guanine remain in the mattress covering or ticking. In the meantime, processes have been developed which render possible an extensive removal of the guanine, so that the mattresses are cleaned to the extent that only allergic persons may be significantly troubled, but these generally mechanical processes cannot prevent the persistence of guanine. There is no known cleaning and disinfecting agent whereby guanine can be removed or at least neutralised to the extent that allergies to household dust do not occur.

[0009] A cleaning agent which contains 0.2 parts alcohol to one part isoprenoid and can be used for cleaning carpets and carpeting as well as for cleaning upholstering fabric is known, for example, from DE 43 11 409 A1.

[0010] Proceeding from this prior art, the object of the invention is to develop an effective process, which is as far as possible free of chemicals, for the cleaning and for the disinfection of textile articles, in particular mattresses. The object of the invention is also to develop a cleaning agent which can be used in particular for those textiles which, in order in particular to facilitate rapid reuse of the textile article and to avoid damage in the interior of the textile article, must not be soaked in the course of the cleaning, while at the same time stains and odours are removed and the textile is treated antibacterially. A further object of the invention is to develop a typical agent which at least has a neutralising effect on guanine, so that a use for cleaning mattresses is possible.

[0011] Regarding a typical biological disinfecting and cleaning agent, the object is achieved by an agent which consists of a condensation product of isoprene (isoprenoid) and a highly volatile, antibacterial alcohol having a

monovalent hydrocarbon group, wherein the alcohol content is between 80% and 98% and the remainder is condensation product of isoprene, and the condensation product of isoprene optionally contains an emulsifier.

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[0012] Regarding a typical process, the object is achieved by a process wherein in a first step, a sample of the dirt particles is withdrawn, the allergen pollution of the sample is then analysed, whereupon the degree of soiling of the article to be cleaned is determined and the covered interior of the article, depending on the degree of soiling found, is subjected to a known per se main cleaning by suction and free of chemicals, the degree of soiling determining the duration of the main cleaning per section of surface of the article being cleaned, and wherein in a final step, the article being cleaned is disinfected and cleaned on its surface by means of a mixture of a highly volatile, antibacterial alcohol and a condensation product of isoprene (isoprenoid) in a mixing ratio of 1 part isoprenoid to 10 to 75 parts alcohol.

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[0013] The process according to the invention with the aforementioned features has in particular the advantage that the rectangular solid textile article, for example, the mattress, is cleaned by a process which is timed, depending on the degree of soiling. For this, the duration of the cleaning process is determined by withdrawing and assessing a sample, while the cleaning of the article is carried out free of chemicals, that is, without the use of chemicals, for example, surfactants. Moreover, the cleaning process according to the invention dispenses with the use of liquids, which would cause complete wetting through of the textile article, which leads as a rule to putrefactive processes with corresponding troublesome odours. After the textile article has been cleaned, it is then disinfected with a purely biological agent, so that remains, for example, of allergens, still present are removed. The

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process according to the invention has proved reliable particularly for application in the field of the chemical-free cleaning of mattresses, so that the combination of cleaning and disinfection in the procedure according to the invention can also be employed, for example, in the sterile area in hospitals, in hotels or in other institutions where large numbers of mattresses are used.

[0014] It has also proved to be advantageous to attest the completed cleaning and disinfection by means of a certificate, preferably an attached seal of inspection, the certificate stating preferably the date of the completed cleaning, the type of cleaning and the date of the next cleaning required. This procedure gives both to the person carrying out the process and to the user of the process an indication of when it will next be necessary to carry out the cleaning and disinfection process according to the invention so that, for example, in hospitals, the occurrence of pathogens or allergens can be effectively prevented. Moreover, the manager of a hotel, old people's home or the like is offered the facility of providing proof of quality, as there is an increasing incidence of allergies as a result of house dust mites or the like, which are found particularly in mattresses or other substantially rectangular solid textile articles.

[0015] The degree of soiling is preferably determined using a table, in which the conditions determined for at least one sample are entered. This procedure is advantageous in so far as the cleaning and disinfection of the textile articles is to be capable of operation by persons without special previous experience or training. After the sample has been withdrawn and the degree of soiling determined, the conditions found are entered in a previously prepared table, from which the required procedure for cleaning and disinfecting the textile article is easily read. For example, one might read from the table that for a degree of

soiling of factor x, the textile article must be cleaned for a period of, for example, 15 or 20 minutes, the assumption being that the cleaning of the textile article is carried out uniformly on at least two of its surfaces, preferably the main surfaces. It is, of course, also possible to take several samples at different points on the textile article, in order to obtain a more accurate result for the determination of the degree of soiling. This procedure is the obvious choice, for example, for a textile article having a large surface area, for example, the mattress of a double bed, or the like.

[0016] A further development of the process according to the invention involves subjecting the withdrawn sample to a chemical allergen test, in which the sample is suspended in an aqueous-alcoholic alkali metal hydroxide solution and the extract formed is tested in a colour reaction using an aromatic diazo compound. The appearance of the colour reaction is assessed as an indication of the pollution of the article by remains of house dust mites.

[0017] Such a process for detecting allergen-containing household dust is known, for example, from DE-C-33 44 087. In this process, a sample is withdrawn from the textile article by means of a vacuum cleaner. To identify the colour, the dust sample (approximately 2 ml) is measured into a glass or plastics cylinder of approximately 8 ml in volume. To this is added approximately 4 ml of an aqueous-methanolic extracting solution, wherein the weight ratio of methanol to water is 75:25 and in which 5 wt.% KOA is dissolved. To this is added the required quantity of diazosulfanilic acid (the filled tip of a microspatula; approx. 20 mg/ml dust) and the closed vessel is shaken for approximately 10 seconds. The vessel is then opened. After about 3 minutes, a strip of white filter paper (0.5 cm<sup>2</sup>) is dipped into the precipitated extracting solution and the brick-red colouration which appears where there is

alcohol. This mixture has the advantage that a cleaning action as well as a disinfecting action is achieved, so that, for example, rings of dirt or of moisture in the surfaces of the textile article, in particular of the mattress, are cleaned. The mixture of alcohol and of an isoprenoid is moreover usable for a relatively long period of time, so that the mixture can be stored in the mixed form. The on-site preparation of a mixture of the disinfecting agent and the cleaning agent is not therefore necessary.

[0021] Preferably isopropyl alcohol is used as alcohol and terpeneol is used as isoprenoid, the latter preferably being mixed with at least one aroma substance, for example, orange aroma. The use of an aroma substance has the advantage that the pungent, acrid disinfectant odour of the alcohol is masked by the aroma substance, so that a pleasant scent is obtained. Odours arising from the previous cleaning process are likewise masked. Here the terpeneol is a colourless to light yellow ethereal oil of low viscosity and having a spicy smell. It is obtained as distillation product of turpentine and functions as a solvent for resins, rubber, paints and wax products. It is also possible to use turpentine substitute, for example, solvent mixtures, e.g. from high-boiling benzine, aromatic and cyclic hydrocarbons, which have a solvent power similar to that of terpeneol. The advantage of these turpentine substitutes is that they are inexpensive to produce.

[0022] Particularly good cleaning and disinfecting results have been produced when the mixing ratio of the mixture of alcohol and isoprenoid is 1 part isoprenoid to 10 to 50 parts alcohol.

[0023] To avoid thorough wetting of the textile article during the final cleaning and disinfection of the surfaces of the textile article, the biological disinfecting and

cleaning agent is sprayed onto the article being cleaned. Consequently only atomised moisture, which does not as a rule penetrate into the interior of the textile article, for example, the mattress, is applied to the surface of the  
5 textile article, so that a thorough wetting of this area does not take place.

[0024] In order to prolong the keeping quality of the biological disinfecting and cleaning agent, an emulsifier  
10 is added thereto.

[0025] Regarding the biological disinfecting and cleaning agent described above, it has become particularly apparent that no rings are formed on the removal of stains on  
15 mattresses. This is of particular importance when the disinfecting and cleaning agent is to be used for cleaning and disinfecting stubborn stains in the region of the mattress surface, as then, for example, disinfecting and cleaning agents have to be applied in relatively large  
20 quantities to the surface of the mattress. No circular stains are formed here, as compared with prior art, for example, where such surfaces are cleaned with a solution of water and surfactants.

25 [0026] The advantage of the disinfecting and cleaning agent according to the invention is, firstly, that it is purely biological, so that it causes no environmental pollution. Moreover, thorough wetting of the textiles - in particular, for example, the ticking of a mattress - is avoided by  
30 using this disinfecting and cleaning agent, because the alcohol volatilises at room temperature, so that it can just penetrate into the ticking of a mattress or into another textile and there can achieve an antibacterial and stain-removing action. However, the alcohol is prevented  
35 from penetrating into the interior of the item of upholstered furniture or of the mattress or into the layer of a carpet adjacent to the floor and from thoroughly

wetting these. Accordingly, the advantage of the disinfecting and cleaning agent according to the invention is that it achieves a deeply penetrating biological cleaning of the textile, but that the latter, because of the small extent of soaking, is reusable within a short time, for example, after 10 minutes, so that mattresses in particular can also be cleaned with this disinfecting and cleaning agent and can be used shortly afterwards as bedding units. Furthermore, it has become apparent in the process according to the invention that guanine of the household dust allergy is effectively removed from the textiles or neutralised, so that the allergen pollution is impressively decreased. Guanine is a constituent of the faeces of house dust mites.

15 [0027] The condensation product is preferably in the form of concentrate consisting of a preferably aromatised terpene and of an alcohol having a monovalent hydrocarbon group, in particular isopropanol, which are mixed in a ratio of 3 to 1 up to 4 to 1. The advantage of the aromatised terpene is that it neutralises odours in the textiles, so that the disinfecting and cleaning agent according to the invention effects not only a disinfection and cleaning, but also a removal of unpleasant odours which are produced, for example, by perspiration onto mattresses.

[0028] A further feature of the invention is that the alcohol content of the disinfecting and cleaning agent is between 80% and 98%, preferably 96.5%, and the remainder is condensation product of isoprene, which preferably amounts to 3.5%. At an alcohol content of less than 80%, the biological disinfecting and cleaning agent according to the invention acquires a sticky consistency and then the textiles being cleaned take up too much of the sticky substance and discolour, that is, on the whole they change colour. The use of isopropanol as the alcohol component of the concentrate has the additional advantage that the

concentrate is as a result independent of temperature, so that the concentrate can be stored for a long time in the range of interest here and can, for example, also be stored on commercial shelving and offered for sale.

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[0029] The condensation product of isoprene contains, according to a further feature of the invention, between 30% and 60%, preferably 55% orange terpene, the invention not being limited, however, to a deodorant based on oranges. Rather, other citrus fruits in particular are also suitable for the biological disinfecting and cleaning agent.

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[0030] It is proposed that the condensation product of isoprene contain up to 25% of aroma substances, in particular those of citrus fruits, preferably orange oil, which in particular is cold-pressed.

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[0031] In order to prolong the keeping quality of the biological disinfecting and cleaning agent, an emulsifier is added thereto. Here the emulsifier is in particular castor oil ethoxylate and/or slightly unsaturated fatty alcohol ethoxylate in a proportion of up to 20%, preferably 15%. Preferably one part fatty alcohol ethoxylate in slightly unsaturated form to two parts castor oil ethoxylate is added to the condensation product of isoprene and it has also proved to be advantageous that the slightly unsaturated fatty alcohol ethoxylate contain up to 8 and preferably 6.5 mol EO.

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[0032] Favourable results have been obtained with a biological disinfecting and cleaning agent for cleaning textiles, in particular textiles which cannot be soaked, such as upholstered furniture, curtains, carpets, mattresses or the like, if the agent consists of a concentrate of a condensation product of isoprene (isoprenoid) and an alcohol having a monovalent hydrocarbon

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[0034] To avoid thorough wetting of the textile article during the cleaning and disinfection of the surfaces of the textile article, the biological disinfecting and cleaning agent is sprayed onto the article being cleaned.

5 Consequently only atomised moisture, which does not as a rule penetrate into the interior of the textile article, for example, the mattress, is applied to the surface of the textile article, so that a thorough wetting of this area does not take place. Furthermore, the spraying of the  
10 disinfecting and cleaning agent has the advantage that here the volatilisation of the alcohol is assisted and that the surface area of many small particles is larger than the surface area of a liquid applied, for example, by means of a sponge or a piece of cloth.

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[0035] Regarding the biological disinfecting and cleaning agent described above, it has become apparent that no rings are formed on the removal of stains on mattresses. This is of particular importance when the disinfecting and cleaning  
20 agent is to be used for cleaning and disinfecting stubborn stains in the region of the mattress surface, as then, for instance, disinfecting and cleaning agents have to be applied in relatively large quantities to the surface of the mattress. No circular stains are formed here, as  
25 compared with prior art, for example, where such surfaces are cleaned with a solution of water and surfactants.

[0036] From the fiscal aspect, it proved to be advantageous to denature the alcohol, pyridine being used for this  
30 purpose.

[0037] In another aspect of the invention, it is proposed that a disinfecting and cleaning agent consisting of a component that neutralises odours, namely a concentrate of  
35 a condensation product of isoprene (isoprenoid) and of a highly volatile alcohol having a low boiling point - preferably II-propanol (isopropyl alcohol), which has an

antibacterial action and in combination with the condensation product of isoprene (isoprenoid) removes stains - be used for cleaning textiles, in particular textiles which cannot be soaked, such as, for example, upholstered furniture, curtains or carpets.

[0038] The invention also proposes the use of a disinfecting and cleaning agent consisting of a component that neutralises odours, namely a concentrate of a condensation product of isoprene (isoprenoid) and of a highly volatile alcohol having a low boiling point - preferably II-propanol (isopropyl alcohol), which has an antibacterial action and in combination with the condensation product of isoprene (isoprenoid) removes stains - for cleaning mattresses, namely, the covering material or ticking, whereby stains and odours are removed from the covering material or ticking and this region of the mattress is disinfected, without parts or layers of the mattress located inside the covering material or ticking being brought significantly into contact with liquid.

[0039] Finally, in a further feature, the invention proposes the use of an aforementioned biological disinfecting and cleaning agent for cleaning textiles, in particular textiles which cannot be soaked, such as, for example, upholstered furniture, curtains, carpets or the like, preferably mattresses, namely, the ticking or the covering material of the mattress.

[0040] Additional features and advantages of the invention are described below by means of Examples.

[0041] A mattress which is to be cleaned is selected and, in a first step, a sample is withdrawn from the mattress by means of a vacuum cleaner in order to visually assess the degree of soiling. For this purpose the vacuum cleaner is fitted with a device for withdrawing samples which is

inserted, for example, into the suction tube and consists of a filter, whereby fine and/or coarse dust is filtered out of the flow of suction air. The extracted dust is then subjected to an allergen test, whereby the presence of allergens, in particular those of the house dust mite, are identified. To this end, the extracted dust is carefully suspended in an aqueous-alcoholic solution of alkali metal hydroxide and the extract formed is tested in a colour reaction with an aromatic diazo compound, the appearance of the colour reaction being assessed as an indication of the pollution of the dust by remains of house dust mites. In addition, the degree of soiling can also be determined quantitatively via the quantity of sample obtained on sample withdrawal per unit of surface area.

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[0042] The withdrawal of the sample therefore makes it possible for the degree of soiling of the mattress being cleaned to be assessed both qualitatively, with regard to the allergen pollution and quantitatively, with regard to the accumulation of dust.

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[0043] The values obtained are then entered in a table, from which the quality and the quantity of the degree of soiling can be read. The degree of soiling found in this case, depending on the type of mattress and the size of the mattress, is converted into values for the type and duration of the main cleaning. For example, the type of vibrations to be applied, namely, ultrasonic or infrasonic, can be selected depending on the degree of soiling. Moreover, where the mattress is more highly polluted with house dust mites and their excreta, it can in addition be stipulated that gas having a destructive action on house dust mites be passed into the mattress to be cleaned. These conditions can be achieved by means of the vacuum cleaner which initially served the purpose of withdrawing the sample, provided that this vacuum cleaner has appropriate

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devices, for example, vibration coupler and gas storage vessel with appropriate inlet nozzles.

[0044] The two main surfaces of the mattress are then  
5 vacuumed with the aforementioned vacuum cleaner, the  
cleaning routine being followed. In carrying this out, one  
should monitor and control both the duration of the  
vacuuming process and the uniform movement of the vacuum  
cleaner over the surfaces of the mattress, so that the  
10 surface of the mattress is cleaned evenly.

[0045] After the two main surfaces of the mattress have  
been vacuumed, a biological cleaning and disinfecting agent  
consisting of isopropyl alcohol and orange terpeneol is  
15 sprayed onto all the surfaces of the mattress. This  
cleaning and disinfecting agent serves the purpose both of  
cleaning the surfaces of the mattress and of removing  
troublesome odours, in particular odours due to  
putrefaction and the like. Finally, the agent serves the  
20 purpose of disinfection, which is achieved in particular  
through the use of isopropyl alcohol.

[0046] Extreme soiling of the surfaces of the mattress can  
also be removed by applying the disinfecting and cleaning  
25 agent in liquid form directly to the mattress. Here it is  
particularly advantageous that the liquid does not leave  
behind any rings on the surfaces of the mattress; such  
rings are observed, for example, when a mixture of water  
and surfactants is used.

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[0047] When the main cleaning has been concluded and after  
cleaning and disinfection, the cleaning conditions, that  
is, duration of cleaning, date of cleaning, type of  
cleaning and the like are recorded in a report, which  
35 conveys to the user of the process according to the  
invention information regarding the cleaning which has been  
performed and the next cleaning required. In the same way,

the essential conditions of the cleaning are recorded on a seal of inspection, which is attached to the mattress. This seal of inspection conveys, for example, to a hotel guest, the information as to when, and by which process, the mattress on the bed in his hotel room was last cleaned. The next cleaning required is also recorded on the seal of inspection, so that the mattress is consistently in a state of cleanliness which will substantially prevent allergic reactions.

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[0048] In the process described above, a biological disinfecting and cleaning agent consisting of a concentrate and II-propanol (isopropyl alcohol) is sprayed onto the surfaces of a mattress being cleaned. The mixing ratio here is 3.5% concentrate to 96.5% II-propanol. The concentrate consists of 55% orange terpene, 15% cold-pressed orange oil, 10% castor oil ethoxylate, for example, Eumulgin® RT 40, 5% slightly unsaturated fatty alcohol ethoxylate with approximately 6.5 mol EO and 15% isopropanol.

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[0049] This biological disinfecting and cleaning agent is sprayed onto the surface of the mattress by means of a spraying device, the mixture penetrating into the surfaces of the mattress, namely the ticking, and there exhibiting a cleaning and disinfecting action. Owing to the high volatility of the alcohol components of the mixture, the moisture does not, however, reach the inner core of the mattress, so that components of the mattress located there are not wetted through significantly. Consequently, because of the volatility of the alcohol, mattresses cleaned in this manner achieve a rapid drying time, for example, of only 10 minutes. Besides the cleaning and the disinfection of the ticking, unpleasant odours - for example, odours due to putrefaction - are removed from the ticking and the guanine constituent of faeces produced by the mites in the ticking is neutralised or removed, so that the contamination of the ticking by the allergens which cause.

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allergy to house dust is considerably decreased. The cleaning and disinfection of a mattress by the agent described above has brought about a decrease in the guanine in the ticking; the extent of this decrease has been such  
5 that the result of an analytical procedure subsequently carried out in accordance with DE-C-33 44 087 indicated a safe mattress surface.

[0050] Extreme soiling of the surfaces of the mattress can  
10 also be removed by applying the disinfecting and cleaning agent in liquid form directly to the mattress. Here it is particularly advantageous that the liquid does not leave behind any rings on the surfaces of the mattress; such  
15 rings are observed, for example, when a mixture of water and surfactants is used.

## Claims

1. Process for the cleaning and disinfection of substantially rectangular solid textile articles such as mattresses, wherein in a first step, a sample of the dirt particles is taken, the allergen pollution of the sample is then analysed in a manner known per se, whereupon the degree of soiling of the article to be cleaned is determined and the covered interior of the article, depending on the degree of soiling found, is subjected to a known per se main cleaning by suction and free of chemicals, the degree of soiling determining the duration of the main cleaning per section of surface of the article being cleaned, and wherein in a final step, the article being cleaned is disinfected and cleaned on its surface by means of a mixture of a highly volatile, antibacterial alcohol and a condensation product of isoprene (isoprenoid) in a mixing ratio of 1 part isoprenoid to 10 to 75 parts alcohol.
2. Process according to claim 1, characterised in that, at least during the main cleaning, gas of a particular concentration and temperature is introduced into the article, which gas destroys house dust mites.
3. Process according to claim 1, characterised in that isopropyl alcohol is used as alcohol and terpineol is used as isoprenoid, the latter preferably being mixed with at least one aroma substance, such as orange aroma.
4. Process according to claim 1, characterised in that

1 part isoprenoid is mixed with 10 to 50 parts alcohol.

5. Process according to claim 1,  
5 characterised in that  
an emulsifier is added to the mixture of alcohol and isoprenoid.
6. Biological disinfecting and cleaning agent consisting  
10 of a condensation product of isoprene (isoprenoid) and  
a highly volatile, antibacterial alcohol having a  
monovalent hydrocarbon group, wherein the alcohol  
content is between 80% and 98% and the remainder is  
condensation product of isoprene, and the condensation  
15 product of isoprene optionally contains an emulsifier.
7. Agent according to claim 6,  
characterised in that  
the condensation product is in the form of concentrate  
20 consisting of an aromatised terpene and an alcohol  
having a monovalent hydrocarbon group, which are mixed  
in a ratio of 3 to 1 up to 4 to 1.
8. Agent according to claim 6 or 7,  
25 characterised in that  
the highly volatile alcohol is isopropyl alcohol.
9. Agent according to claim 6,  
characterised in that  
30 the alcohol content is 96.5% and the proportion of the  
condensation product of isoprene is 3.5%.
10. Agent according to claim 6,  
characterised in that  
35 the condensation product of isoprene contains between  
30% and 60% orange terpene.

11. Agent according to claim 6,  
characterised in that  
the condensation product of isoprene contains up to  
25% of aroma substances, in particular those of citrus  
5 fruits, preferably orange oil, which in particular is  
cold-pressed.
12. Agent according to claim 6,  
characterised in that  
10 the emulsifier is castor oil ethoxylate and/or  
slightly unsaturated fatty alcohol ethoxylate in a  
proportion of up to 20%, preferably 15%.
13. Agent according to claim 12,  
15 characterised in that  
the condensation product of isoprene contains one part  
fatty alcohol ethoxylate in slightly unsaturated form  
and two parts castor oil ethoxylate added as  
emulsifier.
- 20 14. Agent according to claim 12,  
characterised in that  
the slightly unsaturated fatty alcohol ethoxylate  
contains up to 8 mol, preferably 6.5 mol, EO.
- 25 15. Biological disinfecting and cleaning agent according  
to claims 7 and 10 to 14, consisting of a concentrate  
of a condensation product of isoprene (isoprenoid) and  
isopropanol in a mixing ratio of 96.5% isopropanol to  
3.5% concentrate consisting of 55% orange terpene, 15%  
30 cold-pressed orange oil, 10% castor oil ethoxylate, 5%  
slightly unsaturated fatty alcohol ethoxylate with 6.5  
mol EO and 15% isopropanol.
- 35 16. Agent according to claim 6 or 15,  
characterised in that  
the alcohol is denatured with pyridine.

allergy to house dust is considerably decreased. The cleaning and disinfection of a mattress by the agent described above has brought about a decrease in the guanine in the ticking; the extent of this decrease has been such that the result of an analytical procedure subsequently carried out in accordance with DE-C-33 44 087 indicated a safe mattress surface.

[0050] Extreme soiling of the surfaces of the mattress can also be removed by applying the disinfecting and cleaning agent in liquid form directly to the mattress. Here it is particularly advantageous that the liquid does not leave behind any rings on the surfaces of the mattress; such rings are observed, for example, when a mixture of water and surfactants is used.

## Claims

1. Process for the cleaning and disinfection of substantially rectangular solid textile articles such as mattresses, wherein in a first step, a sample of the dirt particles is taken, the allergen pollution of the sample is then analysed in a manner known per se, whereupon the degree of soiling of the article to be cleaned is determined and the covered interior of the article, depending on the degree of soiling found, is subjected to a known per se main cleaning by suction and free of chemicals, the degree of soiling determining the duration of the main cleaning per section of surface of the article being cleaned, and wherein in a final step, the article being cleaned is disinfected and cleaned on its surface by means of a mixture of a highly volatile, antibacterial alcohol and a condensation product of isoprene (isoprenoid) in a mixing ratio of 1 part isoprenoid to 10 to 75 parts alcohol.
2. Process according to claim 1, characterised in that, at least during the main cleaning, gas of a particular concentration and temperature is introduced into the article, which gas destroys house dust mites.
3. Process according to claim 1, characterised in that isopropyl alcohol is used as alcohol and terpineol is used as isoprenoid, the latter preferably being mixed with at least one aroma substance, such as orange aroma.
4. Process according to claim 1, characterised in that

1 part isoprenoid is mixed with 10 to 50 parts alcohol.

5. Process according to claim 1,

characterised in that

an emulsifier is added to the mixture of alcohol and isoprenoid.

6. Biological disinfecting and cleaning agent consisting

of a condensation product of isoprene (isoprenoid) and

a highly volatile, antibacterial alcohol having a

monovalent hydrocarbon group, wherein the alcohol

content is between 80% and 98% and the remainder is

condensation product of isoprene, and the condensation

product of isoprene optionally contains an emulsifier.

7. Agent according to claim 6,

characterised in that

the condensation product is in the form of concentrate

consisting of an aromatised terpene and an alcohol

having a monovalent hydrocarbon group, which are mixed

in a ratio of 3 to 1 up to 4 to 1.

8. Agent according to claim 6 or 7,

characterised in that

the highly volatile alcohol is isopropyl alcohol.

9. Agent according to claim 6,

characterised in that

the alcohol content is 96.5% and the proportion of the

condensation product of isoprene is 3.5%.

10. Agent according to claim 6,

characterised in that

the condensation product of isoprene contains between

30% and 60% orange terpene.

11. Agent according to claim 6,  
characterised in that  
the condensation product of isoprene contains up to  
25% of aroma substances, in particular those of citrus  
5 fruits, preferably orange oil, which in particular is  
cold-pressed.
12. Agent according to claim 6,  
characterised in that  
10 the emulsifier is castor oil ethoxylate and/or  
slightly unsaturated fatty alcohol ethoxylate in a  
proportion of up to 20%, preferably 15%.
13. Agent according to claim 12,  
15 characterised in that  
the condensation product of isoprene contains one part  
fatty alcohol ethoxylate in slightly unsaturated form  
and two parts castor oil ethoxylate added as  
emulsifier.
- 20 14. Agent according to claim 12,  
characterised in that  
the slightly unsaturated fatty alcohol ethoxylate  
contains up to 8 mol, preferably 6.5 mol, EO.
- 25 15. Biological disinfecting and cleaning agent according  
to claims 7 and 10 to 14, consisting of a concentrate  
of a condensation product of isoprene (isoprenoid) and  
isopropanol in a mixing ratio of 96.5% isopropanol to  
3.5% concentrate consisting of 55% orange terpene, 15%  
30 cold-pressed orange oil, 10% castor oil ethoxylate, 5%  
slightly unsaturated fatty alcohol ethoxylate with 6.5  
mol EO and 15% isopropanol.
- 35 16. Agent according to claim 6 or 15,  
characterised in that  
the alcohol is denatured with pyridine.

17. Use of a disinfecting and cleaning agent according to one of claims 6 to 16 for cleaning textiles, in particular textiles which cannot be soaked, such as upholstered furniture, curtains or carpets and/or for neutralising and/or removing guanine from the textile.
- 5
18. Use according to claim 17 for cleaning mattresses, namely, the covering material or the ticking.